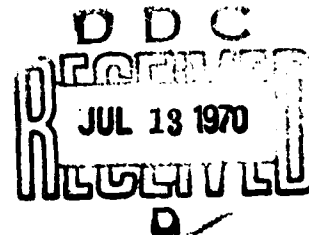


AFOSR 70-1788 TR

AD708524

The Use of Information Files and
Information Retrieval Systems
Within the University Environment

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Evanston, Illinois



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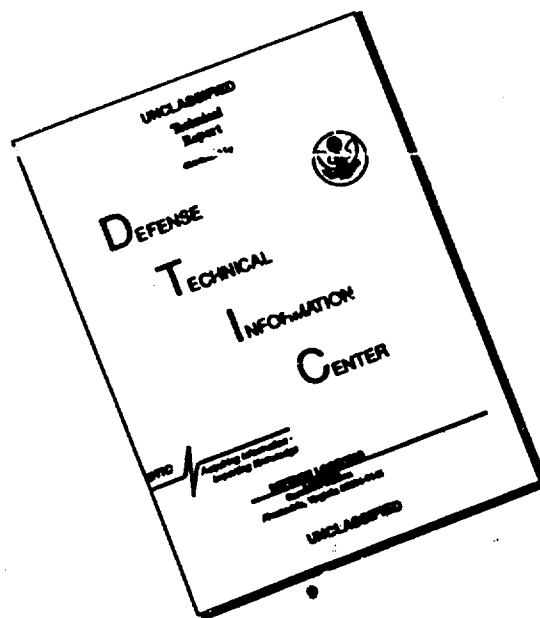
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Prepared for the 1970 International Studies Association Annual Convention,
Selective Dissemination of Information Systems Workshop,
Pittsburgh, Pennsylvania, April 2, 1970.

Supported in part by the Air Force Office of Scientific Research under
Grant No. AFOSR 68-1598, entitled "Man-Machine Interaction in Information
Retrieval Systems".

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A function of the university is to create an environment conducive to learning. Within this environment, the members of the university community seek to discover ideas, concepts, behavioral patterns, etc. that will lead to increased understanding of man and society. This search for knowledge assumes many tasks, one of which will be discussed here.

The term "information explosion" became common usage in the 60's. Printed material of all sorts - books, monographs, research reports, conference proceedings - flowed from the presses to the university libraries. In addition, the number of professional journals greatly increased, each reporting the current work and ideas of active scholars. Faculty and students found it difficult, if not impossible, to "keep up" with their field - not only was there too much to read, but the task of locating pertinent information became enormous. At the same time, more and more social scientists recognized that narrow research within their own discipline was not a viable method to study the problems arising in modern societies. Urban studies encompassed not only sociologists, but economists, psychologists, political scientists, educators, architects, etc. Within the international field, political scientists found, for example, that their work also had to rely on other disciplines: economics, history, sociology, etc. This broadening of the traditional scope of activities increased, too, the information problem of the social scientists. Where previously the sociologist had only to read the major journals in his field, he now found that he had to have access to the ideas of others, multiplying his information seeking task by a large factor.

Early in the 60's selective dissemination of information systems (SDI), using computer technology, were developed in an attempt to cope with the problem. One such system began operation at Northwestern University in 1965 and is still being used to notify scholars of the appearance of new information, usually in the form of journal articles, that are presumed relevant to their interests.¹ Other attempts to solve the information handling

problem continued to use the increasing speed and capabilities of the computer in both batch processing and on-line interactive modes, producing, for example, hard-copy indexes to current literature and on-line circulation and inventory controls for the university library. During this period, the information and computer scientists made great strides in system design and software; the users of the systems, however, did not grow at the same rate. The social scientist, while admitting his problem, has not yet learned to adjust his traditional means of seeking information; nor has the information scientist spent much time with the potential users. In addition, so-called "user surveys", studies of use of services by actual or potential clienteles, do little with the human factors aspects of use, i.e., why information is sought, how it is processed, and how it influenced courses of action. That the problem is not local only to the university is noted by Swanson: "Radical changes in systems will not easily occur because systems designers do not know precisely the data service needs of scientists and technologists."² She also recognizes the other side of the coin, that the man in the system is the most important element of all and that "awareness of the need to understand how man cognitively processes information as well as his characteristics as a communicator and his motivations as a producer and generator is only gradually entering the informations systems context..."³

Despite the enormity of the problem, Northwestern University has made some progress towards reaching a solution. Establishment of general use information files and general purpose information processing systems has been conducted in an inter-disciplinary environment, where the information and computer scientists work jointly with scholars in other disciplines, seeking to discover the needs and habits of the users and then designing, implementing and testing the viability of various means of man-machine interaction.

The Information Files

The general use machine-readable information files currently available can be divided into 1) abstracts of social science literature, 2) author/title/source citations in comparative politics and research methodology, 3) specialized or areal bibliographies, 4) propositional literature, and 5) descriptive studies. Descriptions of these files are contained in Appendix A.

1. "SDI" Social Science File
2. Comparative Politics Citations File
Research Methodology Citations File
3. China Bibliography File
Northwestern University Library File
Vogelback Computing Center Library File
4. Need for Achievement File
Political Participation File
Human Behavior File
5. Codebook File
Projects File
Information Systems File

In addition to the files listed above and generally available to any user at Northwestern, numerous files have been developed by individuals in the areas of African studies, geological literature, organization theory and behaviour, computer simulation. In addition, the bibliographic files of the American Institute of Physics will soon be completed and available for general use.

Processing the Information Files

Two major information processing systems are used at Northwestern University. TRIAL is an information processing system that will perform editing, indexing, and retrieval of textual and certain types of numeric information. The system permits the creation and maintenance of a master file, indexing on

words designated as key words, or alternatively, on all words in the text, and computer retrieval and printout of entries that satisfy a user search command. The current TRIAL system was written by Donald G. Dillaman of Northwestern University for the CDC 6400; it is also operational on 6000 series computers at the University of Minnesota, Purdue University, the University of Texas, the State University of New York at Buffalo, and the University of California Lawrence Radiation Laboratory. In late 1969 Dr. Carl Beck of the University of Pittsburgh sponsored a project to write TRIAL for the IEM 360, Model 50 and up computer systems. This work is being done by Richard Belzer, Computer Implementation Systems, Inc., Pittsburgh, Pennsylvania, and is nearing completion, at which time TRIAL 360 will be made available for distribution.

Search requests to TRIAL are processed in sequential fashion, operating normally in a batch mode. The search statement may consist of any number of words or phrases (≤ 500) and incorporates the Boolean operators AND, OR, and NOT. Weighting of terms is also allowed.

An optimized version of TRIAL is used for SDI-type operations whereby up to 40 different search profiles can be processed in one read of the file and the charges are distributed between the various users.

Whereas TRIAL is essentially a batch processing, sequential search system, the Northwestern University Remote Information Management System (N.U.RIMS)⁴ operates both in batch processing and on-line interactive modes. Data files are maintained and searched using the random access, mass storage capabilities of the CDC 6400 disk file oriented system. The N.U.RIMS system is, at this time, a research-oriented project to investigate the various means by which man can most productively communicate with data files in his search for information. System design and implementation are being done by Donald G. Dillaman and Robert Chalice of Northwestern University's Vogelback Computing Center; user interaction studies are conducted by Lorraine Borman; and the project directors are Professors G. K. Krulee, Department of Industrial Engineering and Management Sciences, and B. Mittman, Director, Vogelback

Computing Center, Northwestern University.

The specific design objectives of N.U.RIMS include a tutorial interactive mode of usage, an on-line browsing capability, a direct link to indexing and statistical analysis routines, and optimized, economic performance. Optional file and record structures are being investigated. As a research project, N.U.RIMS is dual in purpose: to develop a user-oriented, general-purpose interactive system, and concurrent with system implementation, study the man-machine interaction environment.

Compatibility (via a conversion routine) between TRIAL and N.U.RIMS files has been maintained; thus, all of the information files described above can be sequentially processed by TRIAL or interactively searched using the N.U.RIMS command language on either a teletypewriter or the CRT of the CDC 200 User's Terminal.

Current Uses of the Information Files

Selective Dissemination of Information

Ideally, an SDI system (or "current awareness" system) should match user information needs with the items stored in the system and give the user all of the items applicable to his needs but none of the items that are not applicable. The system should also have a provision for "feedback" to enable the user to alter his "profile" of interest terms at regular intervals.

Northwestern's SDI system operates on nineteen journals (see Appendix A), selected to represent interdisciplinary coverage of cross-cultural research, reflecting the interests of the Council for Intersocietal Studies which has supported the Intersocietal Information Center (IIC) and the SDI project. Any Northwestern faculty member is eligible for participation in the SDI activity. The faculty member meets with an IIC staff member who prepares an interest profile that describes the professor's research interest in terms of logical combinations of keywords and phrases. This profile is keypunched and stored along with the interest profiles of all other SDI participants. Once a quarter these profiles are processed, using as an information file the new

journal articles recently abstracted and keypunched by an IIC staff member from the latest arrivals in the library (usually around 145). This "mini" file is maintained as a current awareness file until the next series of input is ready for processing, at which time it is merged with the master SDI file.

The TRIAL SDI program matches the profiles with the contents of the information file, prints the name of the scholar, the abstract of the article, and the words found in the article which caused retrieval. Abstracts are then sent to the appropriate individuals by campus mail, notifying them of articles presumed relevant to their research interests.

Bibliographic Services

The information files, processed either by TRIAL or N.U.RIMS provides a means to search for specific references on an ad hoc basis; searches are initiated by individual researchers seeking answers to specific questions. IIC Research Assistants provide assistance in the use of TRIAL for search and retrieval of documents contained in any of the information files on intersocietal research and related topics. Students often will conduct specialized bibliographic searches in preparing for writing a term paper. Faculty are invited to consult with an IIC Research Assistant to produce specialized bibliographies for research or reading lists for students. The User's Guide to the Intersocietal Information Center, edited by Kenneth Janda and William Klecka, Council for Intersocietal Studies, Northwestern University, January 1970, is a major source document for informing students, faculty and staff at Northwestern as to what is available and where and how one can access the information.

Data Retrieval

Those who are prepared to engage in empirical research often want to know what machine readable quantitative data already exist at Northwestern and are available for secondary analysis. IIC staff members assist users in the use of TRIAL for search and retrieval of studies according to the information contained in their corresponding codebooks. A client can specify some keywords

that relate to his research interests and search the Codebook File for the occurrence of the terms in the description of the study or in the actual variables involved. He would then be informed of all studies that contained the specified keywords, a summary of the research and methodology, where on the tape or cards the variables are located, what coding categories underlie that data, and, in some instances, marginal frequencies for the coding categories plus some simple statistics.

Class Reading Lists

The beginning of each new quarter brings with it the need to develop new reading lists for class distribution, entailing a literature search on the part of the instructor, memos to the libraries requesting certain books and documents to be placed on Reserve Reading Room status, and innumerable hours of secretarial work to type and prepare reading lists for class participants. N.U.RIMS is especially convenient for this type of computer search and retrieval. An on-line teletype search requiring less than 10 minutes of the instructor's time and approximately \$5 - \$25 (depending on the information file being searched and based on the current Northwestern computer charge of \$8.50/minute) provides relevant research material for the course and prints reading lists for class distribution.

Bibliographies and Indexes for Publication

Any of the information files available for search can also be used to produce specialized indexes and bibliographies suitable for direct insertion into a document or as photo-ready copy for offset printing. Author, title, and subject indexes of entire files may be printed by TRIAL, or, using N.U.RIMS, the user can create subsets of the file and then index and print only those records or specific items of records contained in either a set, or the union, intersection, or complement of n number of sets.

Conclusion

In conclusion, we have seen that general-use information files, combined with user-oriented economical information processing systems, when made available to the university community, can provide useful benefits to the information seeker. Obviously, the examples of use presented in this paper are far from a total solution to the problem of the information explosion: problems of data input, semantic and syntactic analysis of the English language, mass storage devices, economical performance, to name just a few, are fully recognized. However, the belief of those individuals at Northwestern involved in both design of systems and use of systems has been that the man in the system is of prime importance: that an information processing system must serve man's needs, and allow him to function in the manner which will most satisfy those needs.

NOTES

1. See Kenneth Janda and Gary Rader, "Selective Dissemination of Information: A Progress Report from Northwestern University", American Behavioral Scientist, 10, 5, January, 1967. Also reprinted in Kenneth Janda, Information Retrieval: Applications to Political Science, The Bobbs-Merrill Company, Inc., 1968, pp. 96-107. The SDI project is currently operated as a service of the Intersocietal Information Center at Northwestern University under the direction of Mrs. Eva Leavitt.
2. An in-depth discussion of user studies has been reported in Rowena W. Swanson, "Move the Information - A Kind of Missionary Spirit", Air Force Office of Scientific Research, June 1967. Rept. AFOSR 67-1247; AD-657794. The larger question of how is information used, how do ideas become known, etc. is presented in Rowena W. Swanson, "Information - An Exploitable Commodity", Air Force Office of Scientific Research, April 1968. Rept. AFOSR 68-0652.
3. Rowena W. Swanson, "Watersheds and Information Flow", Air Force Office of Scientific Research, January 1969.
4. This research is partially sponsored by the Air Force Office of Scientific Research, under grant number 68-1598, project entitled "On-Line Computer-Based Systems for Information Management".

APPENDIX A

The Information Files

1. Abstracts of Social Science Literature

The "SDI" social science file, started in 1965, has been updated and now contains 2439 abstracts of articles published in 19 different journals in anthropology, economics, history, psychology, political science, and sociology. Journals currently in the system are:

	<u>No. of Articles</u>
American Anthropologist (2/66-8/69)	175
American Behavioral Scientist (11/65-10/69)	150
American Historical Review (10/65-1/67; 4/68-10/69)	58
American Journal of Economics & Sociology (7/65-10/66)	57
American Journal of Sociology (9/65-9/69)	188
American Political Science Review (12/65-9/69)	181
American Sociological Review (10/65-10/69)	200
British Journal of Sociology (9/65-12/66; 3/68-6/69)	99
Comparative Studies in Society and History (1/66-6/69)	86
Current Anthropology (10/65-6/69)	89
Econ. Develop. & Cultural Change (10/65-10/66; 10/68-4/69)	64
Ethnology (10/65-10/66; 1/69-10/69)	63
Human Organization (FA/65-WY66; SP/68-FA/69)	143
Internatl. Social Science Journal (1965-1966; 1968)	59
Journal of Conflict Resolution (12/65-9/69)	119
Journal of Personality and Social Psychology (12/65-12/66; 9/68-11/69)	415
Pacific Affairs (SP/69-FA/69)	15
Public Opinion Quarterly (SP/66-FA/69)	180
World Politics (10/65-7/69)	98

2. Author/Title/Source Citations

The Comparative Politics Citations file consists of about 6000 entries taken from the "Foreign and Comparative Politics" bibliographic sections of the American Political Science Review, 1961-1966. Additional citations have been culled from the foreign policy entries in the translations published by the U. S. Joint Publications Research Service, 1957-1962. Books, articles, and documents are included among the citations.

The Research Methodology Citations file contains some 2800 citations from the "Methodology" bibliographic section of the American Political Science

Review, 1959-1964. These entries also cover such topics as attitude research, voting behavior, and psychological aspects of political behavior. Development of the Comparative Politics Citations and the Research Methodology Citations files has been under the direction of Dr. Kenneth Janda, Department of Political Science, Northwestern University.

3. Specialized or Areal Bibliographies

The China Bibliography file, compiled by Lorraine Borman and May Brottman in 1966-67, consists of 592 books, journal articles and research reports published between 1960-1967. English language publications in the areas of political, social, economic, and military topics covering the post-1945 period of mainland China are included.

The NU Libraries file is a bibliography, including abstracts, of all computer-related texts that are currently in the collections of the various NU libraries. Each entry also includes the name of the library, call number, and a classification number using the Computing Reviews classification scheme. The file now contains approximately 1300 entries.

Lorraine Borman of the Computing Center staff originally developed the file in 1966; Noreen Katz, Center Librarian, is now in charge of compilation and index production.

The Vogelback Computing Center Library file is a subset of the NU Libraries file. Its 505 records describe a reference collection of documents, technical reports, monographs, etc. relevant to the computer and information sciences. About 30% of the file is categorized as "information storage and retrieval".

4. Propositional Literature

The Need for Achievement file is an inventory of 167 propositions culled from D. C. McClelland's The Achieving Society, D. Van Nostrand Co., 1961.

The Political Participation file presents 258 propositions on political participation abstracted from the relevant literature through 1965 by Prof. Lester Milbrath. With each proposition is a bibliography of studies tending to support it.

The Human Behavior file contains selected social science propositions taken from B. Berelson and G. Steiner, Human Behavior - An Inventory of Scientific Findings, Harcourt, Brace & World, Inc., 1964 (with permission of the publisher).

5. Descriptive Studies

The Codebook file contains abstracts and codebooks describing approximately 80 quantitative data studies available for secondary analysis in the data archive of the Intersocietal Information Center at Northwestern. A user can specify keywords that relate to his research interests and be informed of all studies that contained the words, a summary of the research and methodology, where on the cards or tape the variables are located, coding categories, and sometimes marginal frequencies.

The Projects file is an example of a management information file. Records contain information about current users of the Vogelback Computing Center, their research titles, etc. Search of this file enables an individual, for example, to locate other scholars on campus who are engaged in similar research but who might be in different schools or departments and therefore, probably unknown.

The Information Systems file was researched and compiled by L. Borman in 1969 and contains 143 records of information describing operational, planned, or experimental information storage and retrieval systems as located in the literature as of September 1969.

APPENDIX B

TRIALSDI Processing of the SDI Social Science File

A retrospective search of 2293 journal articles was made for seven individuals, each of whom constructed their own search commands. A total of 449 articles were retrieved at pro-rated average cost of 16¢ per document.

Search No. 1 requests documents concerning "specialized agencies", "conflict resolution" and also specific documents naming the United Nations, the European Economic Community, etc. 158 documents were retrieved at a cost of \$15.52 or 9¢/article (based on third shift rate of \$7.50/minute).

```
SEARCH NO. 1, 2,4,5,6,8,9 (
(SPECIALIZE .OR. SPECIALIZED) .AND. (AGENCY .OR. AGENCIES) = 100,
(INTEGRATION .OR. SUPRENATIONALISM .OR. SUPRA*NATIONALISM .OR. WORLD*GOVERNMENT)
.AND..NOT. PERSONALITY =100,
(CONFLICT .OR. CONFLICTS .OR. CONFLICTING) .AND. (BEHAVIOR .OR. BEHAVING .OR.
BEHAVIORS .OR. RESOLUTION .OR. RESOLVING .OR. RESOLVE) = 100,
(COLLECTIVE) .AND. (ACTION .OR. ACTIONS .OR. SECURITY) = 100,
UNITED*NATIONS .OR. UN .OR. U*N = 100,
EUROPEAN*ECONOMIC*COMMUNITY .OR. EEC .OR. E*E*C = 100,
COUNCIL*OF*EUROPE = 100,
LATIN*AMERICAN*FREE*TRADE*ASSOCIATION .OR. LAFTA .OR. L*A*F*T*A = 100,
EUROPEAN*FREE*TRADE*ASSOCIATION .OR. OECD .OR. O*E*C*D = 100,
ORGANIZATION*FOR*AFRICAN*UNITY .OR. OAU .OR. O*A*U = 100,
) 5
```

TRIAL Input

REFERENCE CODE.....AJES-24-0412
SERIAL NUMBER..... 121
DATE OF ADDITION TO FILE 10/14/68
DATE OF SEARCH..... 03/04/70

TAKEN FROM EXTERNAL AFFAIRS, OTTAWA, CANADA

INTERNATIONAL YEAR FOR HUMAN RIGHTS IN 1968

AMERICAN JOURNAL OF ECONOMICS AND SOCIOLOGY

24 (OCTOBER, 1965), 412.

AT ITS SESSION IN 1963, THE UNITED NATIONS GENERAL ASSEMBLY HAD DESIGNATED THE YEAR 1968 AS THE INTERNATIONAL YEAR FOR HUMAN RIGHTS. THE COMMISSION ON HUMAN RIGHTS, AT ITS 20TH SESSION, HAD APPOINTED A COMMITTEE TO RECOMMEND A PROGRAM OF MEASURES AND ACTIVITIES TO BE UNDERTAKEN BY MEMBER STATES. THE UNITED NATIONS AND THE SPECIALIZED AGENCIES ON THE OCCASION OF THE 20TH ANNIVERSARY OF THE UNIVERSAL DECLARATION OF HUMAN RIGHTS, AND TO STUDY THE POSSIBILITY OF CONVENING AN INTERNATIONAL CONFERENCE ON HUMAN RIGHTS IN 1968. THE COMMISSION DEVOTED A FEW MEETINGS IN 1965 TO THE REPORT SUBMITTED BY THIS COMMITTEE AND ADOPTED SOME OF THE RECOMMENDATIONS CONTAINED IN THIS REPORT, INCLUDING THE PRINCIPLE OF AN INTERNATIONAL CONFERENCE IN 1968. IT DECIDED THAT THE AIMS OF SUCH A CONFERENCE SHOULD BE--
(BEGINNING OF FIRST PARAGRAPH)

ANOTHER SIGNIFICANT FEATURE OF THE COMMISSION'S FINAL RESOLUTION ON THE TOPIC OF THE INTERNATIONAL YEAR FOR HUMAN RIGHTS IS THAT GOVERNMENTS *ARE INVITED TO REVIEW THEIR NATIONAL LEGISLATION AGAINST THE STANDARDS OF THE UNIVERSAL DECLARATION OF HUMAN RIGHTS AND OTHER DECLARATIONS AND INSTRUMENTS OF THE UNITED NATIONS RELATING TO HUMAN RIGHTS, AND CONSIDER THE ENACTMENT OF NEW OR AMENDING LAWS*.

WORDS FOUND IN ENTRY

SPECIALIZED (1)
AGENCIES (1)
RESOLUTION (1)
UNITED * NATIONS (3)

Search No. 2 demonstrates an interest in "foreign and domestic policy",
 "international interaction", "Soviet and U.S. relations", etc. Seven articles
 were retrieved at a charge of \$8.22(\$1.17/document)

SEARCH NO. 2, 2,4,5,6,8,9 (
 INTERACTION .AND. POLICY .AND. (FOREIGN .AND. DOMESTIC) =100,
 INTERNATIONALISM =50,
 (LINKAGES .OR. INTERACTION) .AND. (INTERNATIONAL .AND. NATIONAL) =100,
 MARXISM =50,
 POLYCENTRISM =100,
 RELATIONS .AND. (SOVIET .OR. USSR .OR. RUSSIAN .OR. RUSSIA) .AND. (US .OR.
 USA .OR. U*S .OR. U*S*A .OR. AMERICAN .OR. AMERICA .OR. UNITED*STATES) =100,
)5

REFERENCE CODE.....JCR -12-0016 605
 SERIAL NUMBER..... 1545
 DATE OF ADDITION TO FILE 10/08/69
 DATE OF SEARCH..... 03/04/70

ROBERTSON ROLAND

STRATEGIC RELATIONS BETWEEN NATIONAL SOCIETIES, A
 SOCIOLOGICAL ANALYSIS

JOURNAL OF CONFLICT RESOLUTION, 12, MARCH, 1968
 16-33

THIS PAPER SEEKS TO ILLUMINATE THE RELATIONSHIPS
 PREVAILING BETWEEN NATIONAL UNITS IN THE CONTEMPORARY
 GLOBAL SYSTEM. THE PROBLEM IS TACKLED PRIMARILY IN TERMS OF
 A CONFRONTATION BETWEEN GAME-THEORETIC AND MORE INCLUSIVE
 CONCEPTIONS OF STRATEGIC INTERACTION. THIS INVOLVES
 TREATING STRATEGY BOTH AS A SOCIOCULTURAL PHENOMENON AND
 AS A SOCIOLOGICAL CONCEPT. RELATIONS BETWEEN NATIONAL
 SOCIETIES ARE ANALYZED IN TERMS OF THE INTERSECTION OF
 INTERNAL-UNIT PROPERTIES AND UNIT-TO-UNIT PROPERTIES. AN
 EXERCISE WHICH NECESSITATES A RECONCEPTUALIZATION OF THE
 POLITICAL ATTRIBUTES OF NATIONAL UNITS. IN DISCUSSING
 UNIT-TO-UNIT THEMES, FOUR MAJOR DIMENSIONS OF INTERACTION
 ARE UTILIZED. FINALLY, A DISTINCTION IS MADE BETWEEN THE
 APPLICATIONS OF THE NOTION OF STRATEGY TO *NORTH-SOUTH*
 AND TO *EAST-WEST* INTERNATIONAL RELATIONSHIPS. THE
 EMPIRICAL MIXTURE OF THESE TWO TYPES OF RELATIONSHIP IS
 BRIEFLY EXPLORED. (ABSTRACT)

WORDS FOUND IN ENTRY

 INTERACTION (2)
 INTERNATIONAL (1)
 NATIONAL (4)
 RELATIONS (2)

APPENDIX C

N.U.RIMS Processing of the SDI Social Science File

A major assumption of the N.U.RIMS design group is that a user working at a teletype or any other terminal device wants fast response to his questions. He wants to be able to pose a question, receive "answers", possibly rephrase the original question, or based on information received, go on to develop other concepts or theories. Response time should be fast enough so that neither his patience nor his line of thought be negatively affected.

Using N.U.RIMS, a large general interest file such as SDI can be segmented into sub-sets by using IF...THEN types of statements. In the example below, SET1 has been previously created, and contains 1399 documents from all of the 19 journals except Journal of Personality and Social Psychology, Current Anthropology, American Anthropologist, Comparative Studies in Society and History, Ethnology, and Human Organization. The user is first interested in who at Northwestern University has published articles in the journals included in the subfile. (1) He finds that 23 documents have been retrieved, too many to print on the teletypewriter. He requests that all 23 be printed on the high speed printer (2) and then goes on to interrogate only the set of Northwestern University Authors for work that was done in either 1968 or 1969. (3) Searching this small subset enables him to achieve not only almost instantaneous response but allows him to narrow and refine his interests, or alternatively, broaden his range of questions. The sample interaction below used 5 seconds of central processor time.

RIMS

 REMOTE INFORMATION MANAGEMENT SYSTEM
 NORTHWESTERN UNIVERSITY
 03/24/70
 11:54:18.

THIS IS A PRELIMINARY VERSION OF ONLINE RIMS
 DO YOU WANT INSTRUCTIONS ON THE USE OF THIS PROGRAM.
 ? NO

DO YOU WANT A DESCRIPTION OF THE FILE YOU WILL BE SEARCHING
 ? YES

ACCESSED FILE HAS THE NAME SDI
 THE FILE CONTAINS 2293 RECORDS.

RECORD DEFINITION AND ITEM TYPES

(1) REFERENCE CODE	(SIMPLE, ALPHANUMERIC)
(2) AUTHOR AND AFFILIATION	(SIMPLE, ALPHANUMERIC)
(3) TITLE OF ARTICLE	(SIMPLE, ALPHANUMERIC)
(4) PUBLICATION	(SIMPLE, ALPHANUMERIC)
(5) PUBLISHED ABSTRACT	(SIMPLE, ALPHANUMERIC)
(6) EXTRACT (FIRST PARAGRAPH)	(SIMPLE, ALPHANUMERIC)
(7) EXTRACT (LAST PARAGRAPH)	(SIMPLE, ALPHANUMERIC)
(8) ADDITIONAL EXTRACT	(SIMPLE, ALPHANUMERIC)
(9) TABLES AND FIGURES	(SIMPLE, ALPHANUMERIC)
(10) SUBTITLES	(SIMPLE, ALPHANUMERIC)

ENTER SEARCH COMMAND OR TYPE HALT

(1) ? BEGIN SEARCH OF SET 1, IF #2 EQ 'NORTHWESTERN' THEN DISPLAY
 ? #2 #3, PRINT RECORD, PLACE IN SET 20; END

SEARCHING INITIATED

NUMBER OF RECORDS ADDED TO SET 20 = 23
 TOTAL NUMBER OF RECORDS IN SET 20 = 23

NUMBER OF REPORTS GENERATED TO DISPLY FILE= 23
 NUMBER OF REPORTS GENERATED TO PRINT FILE= 23
 DO YOU WANT THE DISPLY REPORTS LISTED
 ? *DIVERT,DISPLY,X.
 FILE DISPLY DIVERTED TO X
 ? NO

(2)

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Northwestern University Vogelback Computing Center Evanston, Illinois 60201		2a. REPORT SECURITY CLASSIFICATION UNIVERSITY	
		2b. GROUP	
3. REPORT TITLE THE USE OF INFORMATION FILES AND INFORMATION RETRIEVAL SYSTEMS WITHIN THE UNIVERSITY ENVIRONMENT			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Scientific Interim			
5. AUTHOR(S) (First name, middle initial, last name) Lorraine Borman			
6. REPORT DATE June 1970		7a. TOTAL NO. OF PAGES 19	7b. NO. OF REFS 5
8a. CONTRACT OR GRANT NO. AFOSR 68-1598		9a. ORIGINATOR'S REPORT NUMBER(S)	
b. PROJECT NO. 9769-01			
c. 61102F		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d. 681304		AFOSR 70-1788 TR	
10. DISTRIBUTION STATEMENT 1. This document has been approved for public release and sale; its distribution is unlimited.			
11. SUPPLEMENTARY NOTES TECH, OTHER		12. SPONSORING MILITARY ACTIVITY Air Force Office of Scientific Research (SRM) 1400 Wilson Boulevard Arlington, Virginia 22209	
13. ABSTRACT An environment is described in which inter-disciplinary scholars at a university are able to utilize for various purposes machine-readable bibliographic and other descriptive text files. The information files include abstracts of social science and computer and information science journal literature, descriptions of research activities in information retrieval, and propositional literature in political and behavioral science. Two general purpose information storage and retrieval systems, TRIAL and RIQS, developed at NU, and operating in both batch and on-line modes on a CDC 6400, are used. Search requests are posed as strings of English language and may incorporate any of the Boolean operators. Output can consist of either full reports or printed indexes to the information files. An operational SDI system for social scientists is also described.			

DD FORM 1473

Security Classification

ENTER SEARCH COMMAND OR TYPE HALT

³(3) ? BEGIN SEARCH OF SET 20. IF #4 EQ ('1968' OR '1969') THEN DISPLAY
? #2 #3) END

SEARCHING INITIATED

NUMBER OF REPORTS GENERATED TO DISPLY FILE= 6
NUMBER OF REPORTS GENERATED TO PRINT FILE= 0
DO YOU WANT THE DISPLY REPORTS LISTED
? YES

RECORD NUMBER 1151

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